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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/868,632	09/04/2001	Kazuto Hashizume	P107359-0000	4075

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EXAMINER
HOEY, BETSEY MORRISON

ART UNIT	PAPER NUMBER
1724	

DATE MAILED: 05/02/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/868,632	HASHIZUME, KAZUTO	
	Examiner	Art Unit	
	HOEY, BETSEY	1724	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 March 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) *1-25 and 28* is/are rejected.

7)☐ Claim(s) *26,27 and 29-31* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *8* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 1, the phrase "such as" renders the claim indefinite, because it is unclear whether or not the terms following the phrase are included as limitations or not. In claim 8/7, "the ozone treatment tanks" lacks positive antecedent basis because only a single treatment tank is recited in parent claim 7. In claim 9, "a treatment by using a hydrogen peroxide solution" is considered vague and indefinite because it is unclear what process steps constitute "using". In claim 10, "the treatment system" lacks positive antecedent basis. Also, claim 10 is considered misdescriptive because it reads as though the hydrogen peroxide solution is being oxidatively destroyed by foul-odor air, rather than acting to oxidatively destroy foul-odor air. In claim 17, there is a lack of nexus between the structural elements of the claim and the process recited in claim 1; it is unclear where oxidative destruction of harmful substances by ozone takes place. The remaining claims not mentioned are rejected because they depend on rejected claims.

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 2 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Sartori, U.S. Patent No. 5,130,032. Sartori teaches a method for treating contaminated waste effluents, such as wastewater, comprising contacting the waste effluent with micronized ozone bubbles to destroy the contaminants. The ozone bubbles may be as large as 0.5 microns. The method of Sartori further comprises subjecting the effluent to ultraviolet light.

5. Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Sherman, U.S. Patent No. 6,103,130. Sherman teaches a method for treating fluids, such as wastewater, by contacting the fluid with sub-micron bubbles of ozone to destroy contaminants therein. The term "sub-micron" includes the range of 0.5-1 micron.

6. Claims 1 and 3-5 are rejected under 35 U.S.C. 102(b) as being anticipated by Kerfoot, U.S. Patent No. 5,855,775. Kerfoot teaches an apparatus which operates by contacting small bubbles of ozone with contaminated groundwater to oxidatively destroy contaminants. The bubbles of ozone are selected for optimum break down of contaminants, and may be from 20 to 200 microns in diameter.

7. Claims 18-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Sherman (see above). Sherman teaches a system for treating fluids, such as wastewater, by contacting the fluid with sub-micron bubbles of ozone to destroy contaminants therein. The term "sub-micron" includes the range of 0.5-1 micron. The bubbles are contacted with the wastewater within a tank, as shown in Figure 3.

8. Claims 1, 6-9 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Coury et al., U.S. Patent No. 6,117,334. Coury et al. teach a system that operates by

contacting waste water with bubbles of ozone. The system may be used to treat aqueous systems containing impurities such as dioxins. The bubbles of ozone are supplied to the system via piping between consecutive treatment tanks, and blown into the bottoms of the tanks, as shown in Figure 7. The system may operate by adding hydrogen peroxide to the waste water in addition to adding ozone. The system of Coury et al. may also include ultraviolet treatment following ozone addition. Figure 1 of Coury et al. shows a gas feedback line, which circulates ozone from a downstream tank to an upstream tank.

9. Claims 18, 19, 24, 25 and 28 are rejected under 35 U.S.C. 102(b) as being anticipated by Coury et al. (see above; see Figures 1, 4 and 7). Coury et al. teach a system comprising a series of ozone treatment tanks, means for contacting waste water to be treated with bubbles of ozone in piping between the treatment tanks, a gas feedback line for circulating ozone from a downstream tank to an upstream tank, hydrogen peroxide treatment tanks between ozone treatment tanks, and free radical treatment tanks which may include ultraviolet radiation means.

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. Claims 2-5 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Coury et al. (see above). Coury et al. disclose the system operated as described above. The claims differ from Coury et al. by reciting that the bubbles have a specific

average particle diameter (claims 2-5), and that when hydrogen peroxide is used, the water pH is adjusted to 8 to 10 prior to hydrogen peroxide treatment (claim 12). It is submitted that Coury et al. disclose that the bubbles of ozone used in their system range in size, as small as less than 10 micrometers, with an optimum size being at, or just above, visible bubble stage. It is submitted that it would have been obvious to one of ordinary skill in the art, at the time the present invention was made, to have used a bubble size in the ranges recited in the instant claims in the system of Coury et al., in order to optimize the decontamination of the water. Coury et al. disclose that when ozone and peroxide are used together in the system, the pH of the waste water is adjusted to 9.5. Although Coury et al. do not specify when the waste water pH is adjusted, Figure 1 shows that hydrogen peroxide is added to waste water in the last treatment tank, so it would have been obvious to one of ordinary skill in the art, at the time the present invention was made, to have adjusted the pH prior to the hydrogen peroxide treatment in the system of Coury et al., since hydrogen peroxide is a final step of operating the system.

12. Claims 20-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Coury et al. (see above). Coury et al. disclose the system described above. The claims differ from Coury et al. by reciting that ozone supply means forms ozone into bubbles having a specific average particle diameter. It is submitted that Coury et al. disclose that the bubbles of ozone used in their system range in size, as small as less than 10 micrometers, with an optimum size being at, or just above, visible bubble stage. It is submitted that it would have been obvious to one of ordinary skill in the art, at the time

the present invention was made, to have used a bubble size in the ranges recited in the instant claims in the system of Coury et al., in order to optimize the decontamination of the water.

13. Claims 10, 11, 13, 14, 16 and 17 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

14. Claims 26 and 27 and 29-31 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

15. The following is a statement of reasons for the indication of allowable subject matter:

Claims 10 and 11 would be allowable if rewritten to overcome the 112 rejections and to include all of the limitations of claims 1 and 9, because the prior art of record fails to teach, disclose, or fairly suggest a water treatment process wherein a foul-odor air generated from water within the treatment system is formed into minute bubbles and mixed into hydrogen peroxide solution for oxidative destruction, in combination with all of the other limitations of claims 1, 9 and 10.

Claim 13 would be allowable if rewritten to overcome the 112 rejections and to include all of the limitations of claims 1 and 9, because the prior art of record fails to teach, disclose, or fairly suggest a water treatment process comprising a step of throwing gold, copper oxide, or iron oxide into the water which is to be subjected to treatment using a hydrogen peroxide solution, thereby promoting an oxidation treatment

by the hydrogen peroxide, in combination with all of the other limitations of claims 1 and 9.

Claim 14 would be allowable if rewritten to overcome the 112 rejections and to include all of the limitations of claim 1, because the prior art of record fails to teach, disclose, or fairly suggest a water treatment process comprising a step of carrying out electrolysis treatment, followed by ozone treatment wherein minute bubbles of ozone are contacted with water which contains harmful substances to oxidatively destroy the substances.

Claim 16 would be allowable if rewritten to overcome the 112 rejections and to include all of the limitations of claims 1 and 15, because the prior art of record fails to teach, disclose, or fairly suggest a water treatment process comprising a step of electrolysis treamtment and carbonized filter medium contact treatment, following ultraviolet radiation treatment, which follows ozone treatment.

Claim 17 would be allowable if rewritten to overcome the 112 rejections and to include all of the limitations of claim 1, because the prior art of record fails to teach, disclose, or fairly suggest a water treatment process comprising a step of causing a photocatalytic treatment for deodorizing a foul-odor within an ultraviolet radiation treatment tank, as described by claim 17, in combination with all of the other limitations of claims 1 and 17.

Claims 26 and 27 would be allowable if rewritten in independent form, including all of the limitations of claims 18 and 25, because the prior art of record fails to teach, disclose, or fairly suggest a water treatment system comprising a foul-odor supply

means for forming a foul-odor air, generated from water in the system, into minute bubbles, in combination with a hydrogen peroxide treatment tank, and all of the other limitations of claims 18, 25 and 26.

Claims 29-31 would be allowable if rewritten in independent form, including all of the limitations of claims 18 and 28, because the prior art of record fails to teach, disclose, or fairly suggest a water treatment system comprising an ultraviolet radiation treatment tank having a plurality of partition walls coated with titanium dioxide and arranged such that a distance between adjacent partition walls is within 30 cm, in combination with all of the other limitations of claims 18 and 28.

16. The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Betsey Hoey whose telephone number is (703) 305-3934. The examiner can normally be reached on Monday through Thursday from 8:30 AM to 6:00 PM, and on alternate Fridays from 8:30 AM to 5:00 PM.

The fax phone number for official after final faxes for this Group is 703-872-9311 for all other official faxes the number is 703-872-9310, and for unofficial faxes the number is (703) 305-7115. Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0661.

Betsey M. Hoey

BETSEY MORRISON HOEY
PRIMARY EXAMINER

April 30, 2003